

CW-4941 ASI to IP Converter Quad

Four independent converters with common Gigabit Ethernet output

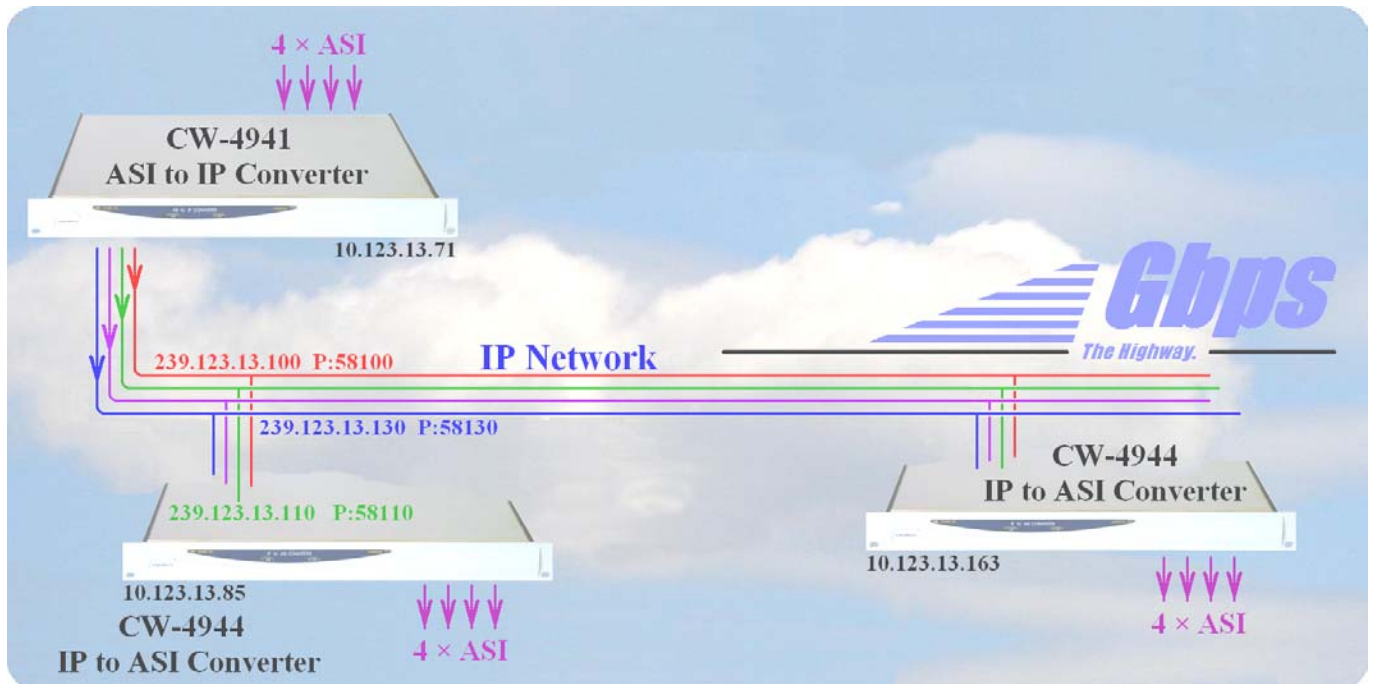
CW-4944 IP to ASI Converter Quad

Four independent IP receivers with common Gigabit Ethernet input and four double ASI outputs

In the field of digital television transmitting the transport stream over IP network will be more and more demanded. The CW-4941 ASI to IP Converter comprises four TS Sender modules, which allow four ASI input signals to be fed to the gigabit IP network in optional independent configurations according to the user's requirements. The TS Senders can be programmed to both unicast and multicast mode; at assembling the UDP/IP packets sync byte search, packet clip, null packet remover and faulty packet remover functions are available to the user.

For the reception of the transport stream transmitted over IP network a special „IP receiver” is needed, which is capable of sorting the vast amount of incoming Ethernet packets and then generating ASI output signals out of the selected packets. The CW-4944 IP to ASI Converter comprises four such „IP receivers”, thus it is capable to produce four ASI data streams out of the UDP packets arriving over the gigabit Ethernet network. The four receivers can be configured independently of each other to both unicast and multicast reception; the applied Gigabit Ethernet Controller handles the multicast network at level-2 specification. For generating the output ASI stream packet clip, null packet remover, false packet remover, NCO and null packet inserter functions are available to the user. The receivers can be programmed for continuous, burst and transparent transmission.

The ASI to IP Converter and the IP to ASI Converter comprise beyond the Gigabit Ethernet Controller the ASI interfaces only. Both types can be configured with the SW-4901 Gigabit Ethernet Controller software, which is available for free download at www.cableworld.eu. For establishing networks for the worldwide rapidly spreading IP based TS transmission a detailed description is given in the 'Transport Stream Managing Over IP' file.



- Unicast and multicast mode, extensive configuration facilities
- Multicast network managing at level-2 specification
- Continuous, burst and transparent transmission
- IPv4 protocol, prepared for IPv6, free programmable IP address
- SNMP remote control facility

In CableWorld's newly developed system the transport streams travel from one device to the other over IP network, instead of using ASI cables. The new system is referred to as

Digital Television System

with Transport Stream Transmission over IP.

All devices of the new system are equipped with gigabit Ethernet connection. Other manufacturers' devices equipped with ASI output or input can be connected to the system through the CW-4941 or the CW-4944 converter respectively. Both converters can also be used alone to convert the transport stream in IP environment or retrieving it from IP respectively.

The four TS Sender modules of the CW-4941 ASI to IP Converter are capable of feeding four ASI input signals on the IP network simultaneously, with optional independent configurations.

The CW-4944 comprises four IP receivers, which generate four different ASI signals out of the gigabit Ethernet signal, at the same time.

Both devices are of universal design: they can be adjusted to the different standards and to other manufacturers' products by programming.

In unicast mode the ASI to IP Converter first searches the receiver installed within or outside the network, and then starts to send out the UDP/IP packets prepared for it. In multicast mode the UDP packets will be sent out unconditionally, at the pace of the ASI input. Forwarding the packets to the proper locations is the job of the switches and routers of the network.

In unicast mode the IP to ASI Converter answers the searching messages (ARP) sent to it and waits for UDP/IP data packets arriving to its IP address. When receiving a UDP packet it unpacks the transport stream data and feeds them to the ASI line. For assembling the ASI output signal an NCO, null packet inserter and numerous supporting function circuitries are available to the user.

In multicast mode, after having received an instruction to receive a data stream, it requests the data stream with an IGMP message and puts it to the ASI line in the format, which has been programmed by the user. During this data transmission it regularly notifies the switch of needing the data further on. On switching off the IP receiver, it automatically logs off the utilized multicast group.

The CW-4941 ASI to IP Converter and the CW-4944 IP to ASI Converter can be used alone, in pair and in systems distributing the transport stream from one place to more locations, alike. The devices can directly be connected to both 100Base-T and 1000Base-T systems. The devices at both the sender side and the receiver side can be configured with the SW-4901 Gigabit Ethernet Controller software, which can freely be downloaded from www.cableworld.eu. Both devices are according to the sense compatible with the devices and software of CableWorld's CW-Net system. E.g. the SW-4811B Transport Stream Analyzer and similar software can directly be used. A detailed description on configuring the Gigabit Ethernet Controller and the IP network is given in CableWorld's „Transport Stream Managing Over IP“ file.

Beyond the numerous remote control facilities available through the IP network, the Gigabit Ethernet Controller can also be remote controlled and programmed with SNMP messages, and in case of

operating failures it can signal the errors by sending out Trap messages.

The transmission of the transport stream over IP network and the extensive use of the multicast mode are technical novelties, which should be get acquainted with by the operators of digital television systems very shortly.

The novelty of CableWorld's solution is in using the same network for controlling the devices and transmitting the TS, thus the user needs to establish one single network only. Separation of these two functions will be made with the Port Numbers: for the TS transmission a dedicated Port Number range has to be programmed into the device, which then must not be used for device control.

Configuring the networks and survey of the suitability of switches etc. are not simple tasks. CableWorld provides its partners high-level support in solving these problems.

Technical data

IP Input / Output

Physical layer	1000Base-T / 100Base-T (Auto Negotiation)
Operation mode	full duplex
Protocol	IPv4 (prepared for IPv6)
Modes	unicast, multicast
Number of connectors	1 (combined TS input or output and device control)
Type of connector	RJ-45
UDP/IP packet	1 ... 7 TS packets/UDP (extensively programmable)

ASI Input / Output

ASI	according to TM 1449 Rec. 1
Input voltage	200 to 880 mV _(p-p)
Output voltage	800 mV _(p-p)
Impedance	75 Ω
Number of inputs	4 × loop-through inputs (CW-4941)
Number of outputs	4 × double output (CW-4944)
Connector type	BNC socket, insulated at the output side
Max. data rate	4 × 200 Mbit/s

Device control

Physical layer	the same network as used for transmitting the TS
Selection of the messages	upon the Port Number (the Port of the device control must not fall into the Port number range of the transport streams)

General data

Front panel LED displays	LINK, ACT, OVERFLOW
Mass	approx. 3.5 kg
Physical dimensions	
Width × height × depth	483.0 × 43.6 × 473.0 mm
Service period	continuous
Power requirement	90 ... 264 V, 47 ... 440 Hz
Power consumption	max. 20 VA
Operating temperature range	+ 5 ... +40 °C
Relative humidity	max. 80 %
Storage temperature range	- 25 ... +45 °C
Relative humidity	max. 95 %, non-condensing



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